

### REMARKS

In the July 28, 2005 Office Action, claims 1-9 remain rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,230,713 to Schauer in view of Applicants' Admitted Prior Art and further in view of U.S. Patent No. 6,032,358 to Carroll, and claim 10 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Schauer, as modified by Applicants' Admitted Prior and Carroll, in view of U.S. Patent No. 5,735,697 to Muzslay.

By the present amendment, independent claim 1 is amended and claims 11 and 12 are canceled, leaving claims 1-10 pending in this application with claims 1 and 6 being independent.

The rejections over prior art are respectfully traversed because none of the prior art either alone or in combination discloses, teaches or suggests a flat cable for a clockspring with conductors printed onto one of the insulating layers of the cable so that a thin layer of conductive material resides on an interior surface of the one of the insulating layers, as recited in amended claims 1 and 6. Each rejection is addressed in detail below.

#### Claim Rejections – 35 U.S.C. 103(a)

Claims 1-9 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 5,230,713 to Schauer in view of Applicants' Admitted Prior Art and further in view of U.S. Patent No. 6,032,358 to Carroll.

Initially, the Examiner asserts that the method of forming, i.e. printing, the device is not germane to the patentability of the device itself. Although Applicants disagree, independent claims 1 and 6 are amended to clarify the structural features of printed conductors, that is a thin layer of conductive material residing on an interior surface of the insulating layer. Because these features are structural and not functional, they must be given patentable weight.

None of Schauer, Applicants' Admitted Prior Art, Carroll, or any combination thereof teaches or suggests a flat cable with conductors printed onto an insulating layer of the cable so that a thin layer of conductive material resides on an interior surface of one of the insulating layers. Because all of the claim limitations are not found in the proposed combination, and there is no suggestion to make the proposed combination, a prima facie case of obviousness has not been established.

Schauer discloses a ribbon cable 10 with conductors 11 soldered to contacts 14 fastened in an insulative contact holder 17 (col. 3, lines 55-59 and col. 4 lines 3-6). Applicants' Admitted Prior Art discloses a flat cable 10 with conductors 20 adhesively bonded between two transparent insulating layers. As admitted in the Office Action, the combination of Schauer and Applicants' Admitted Prior Art fails to teach conductors printed on an insulating layer of the cable.

Carroll fails to cure the deficiencies of the combination of Schauer and Applicants' Admitted Prior Art. Carroll only describes related art as including a flexible circuit that includes a dielectric substrate with conductive inks printed on its surface to define circuit traces. However, nothing in Carroll teaches or suggests conductors located between two insulating layers of a flat cable with the conductors printed on one of those layers so that a thin layer of conductive material resides on an interior surface of the layer, as recited in amended claims 1 and 6.

Moreover, one skilled in the art would not be motivated to modify the combination of Schauer and Applicants' Admitted Prior Art in view of Carroll to teach the claimed invention. The suggested motivation of the need to develop a direct connection of a terminal to a flexible circuit that does not require a solder is misplaced. Carroll does not teach that printing conductors on a substrate allows for a solderless connection of a terminal to the

substrate. Carroll instead teaches a flexible substrate that includes patterns (Figs. 2a – 2d) cut into the substrate for receiving a terminal pin, as seen in Figs. 4 and 5. It is the cuts in the substrate of Carroll that provide a solderless connection. There is no link in Carroll between the solderless connection and printed conductors. In fact, if Carroll were combined with Schauer and Applicants' Admitted Prior Art as suggested, it would result in patterns cut into the cable of the combination of Schauer with Applicants' Admitted Prior Art, and would not result in conductors printed on a layer of the cable. Therefore, the motivation asserted in the Office Action for combining Carroll with Schauer and Applicants' Admitted prior art is untenable. One skilled in the art would not be motivated to combine the teachings of Carroll with Schauer and Applicants' Admitted Prior Art to teach the claimed invention.

In view of the above, Applicants believe a prima facie case of obviousness has not been established. Therefore, the rejection of independent claims 1 and 6 under 35 U.S.C. 103(a) should be withdrawn and the claims allowed.

Dependent claims 2-5 and 7-10 are also allowable for the same reasons. Moreover, these claims recite additional features not found in the prior art. For example, claims 3 and 7 recite that the contacts on the mounting header are curved to provide a larger surface area for connection to the conductors in the flat cable. In contrast, the conductors 14 of Schauer are molded or inserted in the holder 17 and therefore do not provide a greater surface area for connection. It is striker parts 29 of Schauer that provide the greater surface areas or flat zones for soldering the conductors 11 to the conductors 14, as seen in Fig. 6 and described on col. 4, lines 52 – 55. The striker parts 29 are not curved. The bent portions of conductors 14 of Schauer are encased in the holder 17 and therefore those bent portions could not connect to anything.

Regarding dependent claims 4 and 8, the Office Action asserts that the combination of Schauer, Applicants' Admitted Prior Art and Carroll teaches pads which are soldered to

contacts. However, that is in conflict with the suggestion in the Office Action that it would have been obvious to combine Schauer, Applicants' Admitted Prior Art and Carroll to "develop a direct connection of a terminal to a flexible circuit that does not require solder." Therefore, dependent claims 4 and 8, which specifically recite a solder, are per se distinct from the combination of Schauer, Applicants' Admitted Prior Art and Carroll which eliminates the solder.

Also, claims 5 and 9, as amended, recite that the contacts on the mounting header are straight and are inserted through circular apertures on the flat cable and secured to the apertures for electrical connection to the conductors. Although Carroll teaches pins 80 inserted through apertures 80, the apertures 80 are made in conjunction with flaps 74 designed to create a wiping action, thereby obviating the need for soldering. In contrast, claims 5 and 9 recite that the contacts are secured to the circular apertures. For example, the conductors 66 of the application can be secured to the apertures 62 by soldering (see page 9, lines 9-12 of Applicants' disclosure). One skilled in the art would not use the pin and aperture arrangement as taught by Carroll to secure contacts to apertures, such as by soldering, because the electrical traces 20 of Carroll are coated on the wrong side of the substrate 42. More specifically, the pin 90 of Carroll would have to be inserted from the side on which the traces are coated in order for the substrate to function as a female electrical connector (see col. 4, lines 56-67), thereby making the area with the conductive coating inaccessible for securing the connection, such as by a soldering apparatus.

Claim 10 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Schauer, as modified by Applicants' Admitted Prior Art and Carroll, in view of U.S. Patent No. 5,735,697 to Muzslay. Initially, because claim 10 depends from claim 1, claim 10 is allowable for the same reasons discussed above.

The Office Action first asserts that moving the Schauer holder 17 from the end portion of the ribbon 10 to an intermediate portion is an obvious rearrangement of parts. However, locating the mounting header of the claimed invention on an intermediate portion of the flat cable is not a mere rearrangement of parts but instead facilitates the incorporation of two extended electrical signal lines and associated connectors into a single assembly. This incorporation obviates the need for two additional wire harnesses and at least one additional connector, which would have otherwise been required.

The Office Action next asserts that Muzslay shows substantially the same structure as the claimed invention. The Office Action suggests that the drawings must be evaluated for what they reasonable disclose. However, the figures of Muzslay could not be interpreted as teaching a mounting header located at an intermediate portion. That is because, if connector 12A of Muzslay is interpreted as the mounting header located at an intermediate portion, then the portions 130S and 130Q cannot be characterized as extensions, but rather must be characterized as opposite extreme portions. Alternatively, if portions 130S and 130Q are interpreted as extensions, then the connector 12A must be characterized as an extreme instead of an intermediate portion. Nothing in the Office Action rebuts this argument.

Therefore, a prima facie case of obviousness has not been established with respect to claim 10. Thus, Applicants believe the rejection of claim 10 under 35 U.S.C. 103(a) should be withdrawn and the claim allowed.

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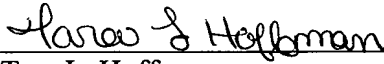
In view of the foregoing, claims 1-10 are believed to be in allowable condition.

Prompt and favorable treatment is respectfully solicited.

Please charge any shortage of fees or credit any overpayment thereof to BLANK  
ROME, LLP, Deposit Account No. 23-2185 (115584-00343).

Respectfully submitted,

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